ence of such an idiopathic ulceration is based upon the reports of a limited number of cases, which do not furnish satisfactory evidence of the view presented. The recognized causes of ulceration and perforation are sufficiently numerous to explain the origin of most of the ulcers; errors of observation are frequent, many examiners are incompetent, and very strong evidence, much more convincing than appears in the cases reported, must needs be presented before an idiopathic form of perforating ulcer can be admitted among the well-known varieties.

In thus pointing out some of the peculiarities of this volume, attention should again be called to the unusual circumstances of its origin. Its faults are those almost necessarily connected with the period of development attained by the writer, a medical student. At such a stage authority occupies so prominent a position that recorded cases are used as if they were satisfactory evidence, and a great deal is omitted which time, opportunity, and, perhaps, training might have permitted a place. As the work of a medical student, the book presents unusual merit, and compares very favourably with works of a similar character prepared by men of fuller maturity. The writer shows zeal, industry, and considerable discrimination, and his task has been accomplished with much care and taste. R. H. F.

ART. XXIX.—*The Pathological Anatomy of the Ear.* By HERMANN SCHWARTZE, M.D., Professor in the University of Halle on the Saale. With the author's revisions and additions, and with the original illustrations. Translated by J. ORNE GREEN, A.M., M.D., Aural Surgeon, Boston City Hospital; Clinical Instructor in Otology in Harvard University. 8vo. pp. 174. Boston: Houghton, Osgood & Co., 1878.

THIS is a most excellent scientific work, and the subject is so divided as to make the book a very easy one to read and understand. A typically normal ear is rarely found on dissection, for, as we are informed, in most cases abnormal conditions of congestion and secretion are discovered, especially in the middle ear. These are to be regarded either as occurring at the time of death or *post mortem*.

The diseases most frequently affecting the ear are the acute exanthemata, typhus and typhoid fever, acute and chronic catarrh of the nose and naso-pharynx and their results, tuberculosis, diseases of the heart, syphilis, puerperal fever, and chronic alcoholism.

When treating of *caries* and *necrosis* of the temporal bone it is stated that these processes attack the temporal more frequently than any other cranial bone, the points of preference being the mastoid portion: less frequently the petrous part, and least frequently the internal meatus or the porus acusticus internus. Necrosis of this bone is less common than caries. The pages 12–19, which contain the author's digest of necrosis and caries of the temporal bone, with a short sketch of the ravages of abscess of the brain, should be carefully studied by every practitioner of medicine. On page 14 the author but reiterates the statement of the deplorable fact that caries of the temporal bone is generally the secondary result of an acute or chronic suppuration of the soft tissues of the ear, which has extended to the surrounding bone; seldom is it the result of suppurative ostitis or primary periostitis, and on page 17 he states that the relation between caries of the temporal bone and abscess of the brain, is that the former is the primary lesion and the latter the secondary lesion, thus forming a most direful sequence between a too often neglected ear-ache, and a surely fatal disease.

Of course it must be admitted, as is stated by the author, "that abscess of the brain and disease of the ear may occur simultaneously from the same cause, trauma, as has been shown by Albers."

In this connection it will be well to bear in mind that which is recalled by the statements of Professor Schwartze, that abscess of the brain may be unsuspected, and also that in two instances, once by Von Trœltsch, and once by Magnus, an abscess of the brain has been found on the side opposite to the affected ear. To explain this peculiarity, metastasis, tuberculosis of the lung (by infecting the brain from a gangrenous cavity), and an accidental coincidence have been urged. The rule is, however, that but too plainly the aural disease has produced the cerebral abscess: even the doubtful cases are extremely rare. Sometimes, as our author states, instead of an abscess, a tumour of the brain is found in connection with chronic otitis. In referring to *fracture of the base of the skull* and the implication of the ear therewith, it is stated that in some instances "brain substance may be forced through the meatus externus." "Inflammation of the brain and its meninges, dependent upon fracture of the petrous bones, may not ensue until several weeks after the injury." This is an important point to remember.

Under *malignant tumours* of the temporal bone, which as primary occurrences are rare, primary epithelial cancer is alluded to, three cases of which the author has observed. In all of these observed by Dr. Schwartze the origin of the growth was the tympanic mucous membrane.

The *external auditory canal* is next considered, and an important physiological fact is presented, viz.:—

> "In childhood, up to the fourth year, an ossification gap, closed merely by connective tissue, is found normally in the anterior lower wall, to which Von Trœltsch first directed attention. The knowledge of this fact is of importance to avoid mistaking it for a carious opening. In adults, remains of this opening are met with in exceptional cases. During purulent inflammations of the middle ear, ulcerative destruction of the skin over this spot of deficient ossification may occur, and through the opening an extension of the inflammatory process of the meatus may reach the parotid gland and the lower jaw."

The author reminds us of another important fact, viz.: the common name, "catarrh of the external meatus has no anatomical justification." Since catarrh can exist only where there is mucous membrane, and as in the external auditory canal there is no mucous membrane, there can be no true catarrh. Profuse suppuration of this canal, we are told, is unfavourable to the growth of fungi; hence otomycosis is most usually found in an ear which has been, but is no longer, the seat of active inflammation. An eczema of the auditory canal may extend over the membrana tympani. "A not infrequent complication of eczema of the meatus is mucous catarrh of the middle ear, without perforation of the membrana tympani." Regarding furuncle of the auditory canal our author states that its most common seat is the anterior lower wall of the meatus. This, the circumscribed inflammation of the skin of the canal, is a very trivial matter when compared to *diffuse* inflammation of the skin of this part of the ear.

The latter may extend from the cutis and involve the subcutaneous cellular tissue, and "if not relieved by *early* and *deep* incisions the inflammation may go on to gangrene, extensive destruction, disease of the bone, or even to purulent thrombosis of the sinuses and to septicæmia."

Foreign bodies in the form of masses of sebum, epithelium, etc., in this canal may, besides the secondary inflammation of the skin, produce atrophy or ulceration of the membrana tympani from pressure. More commonly, by forcing the drum-head inwards, they favour adhesion between the membrana tympani and the inner wall of the tympanum. They may also greatly enlarge the calibre of the canal. In one instance Von Trœltsch observed fatal facial erysipelas result from the irritation set up by one of these masses in the ear.

On page 53, Cholesteatomata of the meatus are alluded to. It is known that Toynbee described large numbers of these collections in the meatus, as sebaceous tumours. He ascribed to his "sebaceous tumours" an enveloping membrane of connective tissue, which has its origin on the floor of the meatus, near the drum-head. His description, therefore, of "sebaceous tumours" closely corresponds with that now given of cholesteatoma. It may be that these collections do originate in the canal from true sebaceous tumours or wens. These by breaking down would produce a condition of the meatus analogous to that found in the so-called cholesteatoma. But the latter term only describes the resultant appearances, not the cause. A wen in the auditory canal is exactly like a wen in any other part of the skin covering a cranial bone, and it is well known that a wen over the calvarium will erode the bone, and finally grow upon the dura mater,[1] or by finally breaking down produce results similar to the so-called sebaceous tumours of the meatus. Judging by analogy it would seem highly probable that so-called cholesteatoma of the canal is in reality nothing more than a broken-down wen. In referring to injuries of the meatus, it is stated "that limited fractures, which do not extend to the base of the skull, sometimes occur in the extremely thin upper wall of the meatus from contusion of the head. This may produce injury of the brain and evacuation of the brain substance from the ear without death necessarily resulting."

The author is not accurate in his statement that he was the first to call attention to the growth of vegetable parasites in the human ear: his first paper, as is stated on p. 55, of the work before us, was published in 1865. But Mayer[2] and Paccini,[3] both preceded him in describing the growth of fungi in the human ear.

The author makes the interesting statement that a constant hyperæmia of the manubrial vessels of the membrana tympani is a sign either of "inflammatory irritation in the drum-membrane or tympanic cavity or else a symptom of habitual congestion of the head."

Perforations of the membrana tympani are said to be most common in the anterior lower quadrant of the membrane in the intermediary zone between the manubrium and the tendinous tympanic ring. The largest and most rapid destructions of the membrane occur in scrofula, tuberculosis, and especially in scarlatina. Prof. Schwartze considers duplicate perforations of the membrana tympani common, while Prof. Politzer holds an opposite opinion. Our author presents no statistics for his opinion, which, in view of the rather exceptional position taken by him, would seem desirable.

So far as our experience goes, multiple perforations of the drum-head are rare in this country, and by no means common in Germany. The cribriform condition of the membrane alluded to by the author is entirely unknown in our experience, but Prof. Schwartze now inclines to the view, first advanced by Bonnafont, that "not only in tuberculosis pulmonum and in miliary tuberculosis, but also in scarlatina, with pharyngeal diphtheritis and pyæmic conditions, the membrana tympani may be simultaneously perforated at different points. These multiple perforations are at first very minute, but rapidly enlarge, and finally coalesce into a large opening, perhaps from emboli." On this subject the author quotes C. E. E. Hoffmann.[4] When considering the membrana flaccida or Shrapnell's membrane, *i. e.*, the part of the membrana tympani above the folds, the author disappoints us, in slighting, as it appears to us, the pathological conditions often found in this part of the ear. They are not only grave as to the injury to hearing, which they produce, but they are difficult to cure. The perforations in this part of the drum-head are generally, if not always, the sign of deep-seated disease in the upper part of the tympanic cavity. Otological writers in this country have contributed largely to this subject.

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[1] Camille Misset. Etude sur la Pathologie des Glandes sébacées. Paris, 1872.

[2] Muller's Archiv, p. 401, 1844.

[3] "Supra una Muffa parasita (Mucedo) nei condotto auditivo esterno." Florence, 1851.

[4] Archiv f. Ohrenheilkunde, IV. S. 277.

The *Tympanum* commands our attention as that part of the ear most "frequently involved in pathological processes."

The three forms of catarrhal inflammation affecting the middle ear are the *serous*, the *mucous*, and the *purulent*. While these forms clearly defined may and do occur, the author thinks the transition forms are more common. "The very highest degrees of catarrhal swelling of the tympanic mucous membrane are capable of complete retrogression, the membrane resuming its cobweb-like delicacy, and moulding itself accurately to the osseous walls and contents of the tympanic cavity." It is of the highest importance to note that there is also a *croupous* and *diphtheritic* inflammation of the tympanum, unknown until described by Wendt.

Of *new growths* in the tympanum, polypi are common, appearing usually as fibromata and as myxomata: rarer forms are fibroma and gumma of the chorda tympani. Angioma has been found in the ear by Dr. A. H. Buck, of New York. Other new growths in this cavity are named, as, exostosis, hyperostosis, cysts, epithelial cancer, osteosarcoma, and tubercle. The author reminds us that the *Eustachian tube* has a very narrow, slit-like mouth in children. This fact shows how easily this part of the tube partakes in swelling of the pharyngeal mucous membrane in childhood, and why it is that the tube becomes so easily closed in the young. The author denies the existence of the so-called valve of the tube, heretofore described as a normal condition. The valve-like duplicature of the mucous membrane "is pathological, and due to a relaxation or wrinkled swelling of the mucous membrane." On p. 135 a caution is given, respecting the Eustachian tube, in the statement "that traumatic inflammations of the Eustachian tube sometimes occur after surgical operations in the naso-pharynx, and from incisions into the tubal orifice during *resection of the upper jaw*, etc."

Ulceration of the pharyngeal mouth of the tube occurs in syphilis: ulcerations here and on other parts of the naso-pharynx "can often be recognized by a rhinoscopic examination, where the usual inspection of the pharynx, without a mirror, would raise no suspicion that an ulcerative process existed." According to Rüdinger the tube is liable to abnormal gaping throughout its entire length with atrophy of the musculus dilatator tubæ in *old persons*. Cicatricial closure of this tube, at its pharyngeal end, has been observed after diphtheria, variola, and scrofula. New growths appear in this tube in the form of polypi and polypoid tumours, syphilitic excrescences, caseous nodules in miliary tuberculosis, and exostosis in the osseous part.

Complete absence of the *mastoid portion* is found with other malformations in the temporal bone in congenital deaf-muteness. It is said that in 600 skulls examined by Hyrtl, the occiput entered into the formation of the mastoid cells in three cases. Catarrhal inflammation of the pneumatic cells of the mastoid bone may exist as an independent affection without extending to the tympanum, and without perforation of the membrana tympani. Dr. Zaufal's case is alluded to, in which an isolated suppuration in the mastoid cells took place without caries and without extending to the tympanum, but led to phlebitis of the sinuses and death.

Periostitis externa, and caries and necrosis are next considered, together with eburnation or sclerosis; the latter is termed a common result of chronic inflammations of the middle ear, especially of the purulent variety. *New growths* in the mastoid portion are of various kinds; prominent among them are lymphomatous tumours, concretions of a chalky consistency in the mastoid cells from syphilis, polypi, cholesteatoma, and *primary epithelial cancer.*

The diseases of the *inner ear* and auditory nerve are considered under malformations, anæmia, hyperæmia, hemorrhage, inflammation and its results, caries and necrosis, new growths and injuries. There is also an extremely interesting and valuable contribution to the diseases of the auditory nerve, between its central origin and its entrance into the labyrinth.

The entire labyrinth may be wanting or imperfectly developed. "A congenital absence of the auditory nerve is extremely rare, and is never found except with absence of the labyrinth." Anæmia of the labyrinth, not easily diagnosed, has been assumed to be the cause of disturbances of function of the ear, following depleting diseases. It is said to result also from contraction and embolus of the arteria auditiva interna, and also from aneurism of the basilar and carotid arteries.

Hyperæmia of the labyrinth is given as "the result of disturbances in the vasomotor innervation in hysterical persons."

In regard to the so-called Menière's disease, and the very hypothetical primary inflammation adduced by Menière to account for the case given by him, and on which an absurd and incorrect nomenclature has been established and widely circulated, "it is doubtful whether it was anything more than a simple hemorrhage."

It will not be out of place to say that aural vertigo should be the general term for all cases of vertigo arising from aural irritation. Menière's disease, if it means anything, means disease of the semicircular canals, according to Menière himself; and yet this name is applied loosely to the vertiginous symptoms which may arise from irritation in the ear, anywhere from the meatus to the auditory nerve.

It is well known that the labyrinth cavity has been found filled with pus in cerebro-spinal meningitis, but this is emphatically a secondary process, a neuritis descendens, from the meninges to the labyrinth.

Caries and necrosis of the labyrinth are next considered, and some very interesting cases of detachment of the cochlea referred to, one of which, that of Niemetschek, of Prague, records the expulsion of the necrotic labyrinth through the nose.

The "diseases of the auditory nerve" is a most carefully prepared digest of the data on these points, enriched by the author's experience in several matters of obscurity and rarity, as, for example, the result produced in the ultimate fibres of the auditory nerve by tumours on its trunk, and amyloid degeneration of the nerve, the effects on it produced by gummata of the brain or base of the skull, basilar meningitis, aneurism of the arteria basilaris, hydrocephalus internus, and other intracranial processes.

It is with unfeigned pleasure we have read this book, and with a similar feeling we congratulate the author on his admirable work, and the profession on the acquirement of such a book for guidance in pathology. The author has been very fortunate in his translator, and to Dr. Green readers of English owe a debt of thanks not easily discharged. C. H. B.